

Contribution to the knowledge of the grasshoppers, bush crickets and crickets of southern Serbia

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Abstract

This paper represents data on the distribution of Orthoptera in southern Serbia based on short field trips performed in 2013 and recently published data. Research was performed mainly on steppe grasslands and forest edges. Altogether we detected 52 species (30 Ensifera and 22 Caelifera), which represents 30% of the total known Serbian Orthoptera fauna. As a new species for Serbia we detected *Pholidoptera macedonica*. The previously as *Vichetia knipperi* determined specimens belong to *Metrioptera tsirojanni*.

Zusammenfassung

Dieser Artikel fasst die aktuellen Kenntnisse zur Verbreitung von Heuschrecken im südlichen Serbien zusammen. Als Datengrundlage dienten kurze eigene Geländeerfassungen im Jahr 2013 und bereits publizierte Studien. Die schwerpunktmäßig untersuchten Habitate waren Steppenrasen und Waldränder. Insgesamt haben wir 52 Arten nachgewiesen (30 Ensiferen und 22 Caeliferen). Dies entspricht 30% der aus Serbien bekannten Heuschreckenarten. Mit *Pholidoptera macedonica* wurde eine neue Art für Serbien gefunden. Bei den bislang als *Vichetia knipperi* bestimmten Tieren handelt es sich um *Metrioptera tsirojanni*.

Introduction

The majority of studies on the Orthoptera fauna in Serbia was focused on the eastern and central part of country, while the southern part has been poorly studied. Until now there are only few data on the distribution of Orthoptera from this region (ADAMOVIĆ 1955, 1975). PAVIĆEVIĆ et al. (2014), however, showed that southern Serbia is rich in usually more southerly distributed species. On the basis of recently published data and collected material during short field trips, we gave an overview on the current knowledge on the Orthoptera fauna of southern Serbia.

Material and methods

Sampling was performed mostly on steppe grasslands and forest edges. Sites were sampled by using sweep netting, visual searching and, during night, with headlamps on the road. If possible, species were determined in the field and released. Species difficult to determine were preserved, pinned, dried and afterwards identified in the Laboratory for Taxonomy and Zoogeography of Invertebrates, Novi Sad, using the taxonomic keys of RAMME (1951), HARZ (1969,

1975), HARZ & PFAU (1983), BELLMAN (1993), SZIJJ (2004), BAUR et al. (2006) and WILLEMSE et al. (2009). Collected specimens are deposited in the Zoological Collection of Department of Biology and Ecology at Novi Sad (ZZDBE). The classification system is based on the Orthoptera Species File 5.0 (Eades et al. 2016).

Results and discussion

List of species

ENSIFERA

PHANEROPTERIDAE Burmeister, 1838

Phaneroptera falcata (Poda, 1761)

Locality: 1♀ - Miratovac (42.270, 21.638), 19.7.2013.

Phaneroptera nana Fieber, 1853

Locality: 1♀ - Miratovac (42.270, 21.638), 19.7.2013.

Tylopsis lilifolia (Fabricius, 1793)

Locality: 1♂ - Miratovac (42.270, 21.638), 19.7.2013.

Ancistrura nigrovittata (Brunner von Wattenwyl, 1878)

Locality: 1♂ - Pčinja (42.332, 21.898), 19.7.2013.

Metaplastes ornatus (Ramme, 1931)

Locality: Pavićević et al. (2014);

Andreiniimon nuptialis (Karny, 1918)

Locality: Pavićević et al. (2014);

Leptophyes albovittata (Kollar, 1833)

Locality: 1♀ - Kozjak Mt., (42.319, 21.906), 8.8.2013.

TETTIGONIIDAE Krauss, 1902

Meconema thalassinum (De Geer, 1773)

Locality: Pčinja (42.332, 21.898), 6.8.2013., Kozjak Mt., (42.319, 21.906), 8.8.2013.

Conocephalus fuscus (Fabricius, 1793)

Locality: Pčinja (42.333, 21.898), 6.8.2013.

Ruspolia nitidula (Scopoli, 1786)

Locality: Pčinja (42.333, 21.898), 6.8.2013.

Tettigonia viridissima (Linnaeus, 1758)

Locality: Pčinja (42.332, 21.895), 6.8.2013.

Tettigonia caudata (Charpentier, 1842)

Locality: Pčinja (42.333, 21.898), 6.8.2013.

Decticus verrucivorus (Linnaeus, 1758)

Locality: 1♂ - Pčinja (42.332, 21.895), 6.8.2013.

Platycleis grisea (Fabricius, 1781)

Locality: 1♂ - Pčinja (42.317, 21.894), 7.8.2013.; 1♂, 1♀ - Miratovac (42.270, 21.638), 18.7.2013.

Montana macedonica (Berland & Chopard, 1922)

Locality: Pavićević et al. (2014);

Bicolorana bicolor (Philippi, 1830)

Locality: Pčinja (42.335, 21.901), 6.8.2013.

Roeseliana roeselii (Hagenbach, 1822)

Locality: Pčinja (42.335, 21.901), 6.8.2013.

Metrioptera tsirojanni Harz & Pfau, 1983

Locality: Pavićević et al. (2014) as *Vichetia knipperi* (Ramme, 1951);
2♂♂, 2♀♀ - Pčinja (42.333, 21.902), 6.8.2013.



Figure 1: *Metrioptera tsirojanni*, Pčinja, 6.8.2013. Photo: L. Horvat.

Pholidoptera macedonica Ramme, 1928

Locality: 1♀ - Pčinja (42.317, 21.894), 7.8.2013.

Pholidoptera aptera karnyi Ebner, 1908

Locality: 1♂, 1♀ - Kozjak Mt., (42.319, 21.906), 8.8.2013.

Pholidoptera griseoaptera (De Geer, 1773)

Locality: Kozjak Mt., (42.319, 21.906), 8.8.2013.

Eupholidoptera schmidtii (Fieber, 1861)

Locality: 1♂ - Pčinja (42.332, 21.895), 6.8.2013.; 1♀ - Pčinja (42.337, 21.898), 6.8.2013.

Pachytrachis gracilis (Brunner von Wattenwyl, 1861)

Locality: Pčinja (42.344, 21.902), 7.8.2013.; Kozjak Mt., (42.319, 21.906), 8.8.2013.

Rhacocleis germanica (Herrich-Schäffer, 1840)

Locality: 1♂ - Miratovac (42.270, 21.638), 19.7.2013.; 1♂ - Pčinja (42.344, 21.902), 7.8.2013.; Klenike (42.392, 21.885), 19.7.2013.

Saga natoliae Serville, 1838

Locality: Pavićević et al. (2014);

Saga pedo (Pallas, 1771)

Locality: 1♀ - Miratovac (42.270, 21.638)

Ephippiger ephippiger (Fiebig, 1784)

Locality: 1♂, 1♀ - Pčinja (42.344, 21.902), 7.8.2013.; 1♂ - Kozjak Mt., (42.319, 21.906), 8.8.2013.

Gryllus campestris Linnaeus, 1758

Locality: Miratovac (42.270, 21.638), 19.7.2013.

Pteronemobius heydenii (Fischer, 1853)

Locality: Klenike (42.392, 21.885), 19.7.2013.

Oecanthus pellucens (Scopoli, 1763)

Locality: 1♀ - Pčinja (42.344, 21.902), 7.8.2013.

CAELIFERA

TETRIGIDAE Serville, 1838

Tetrix cf. *bolivari* Saulcy, 1901

Locality: 1♀ - Pčinja (42.335, 21.901), 6.8.2013.

TRIDACTYLIDAE Brullé, 1835

Xya pfaendleri Harz, 1970

Locality: Pavićević et al. (2014);

ACRIDIDAE MacLeay, 1821

Odontopodisma decipiens Ramme, 1951

Locality: 1♀ - Pčinja (42.332, 21.896), 6.8.2013.; 2♂♂, 2♀♀ - Pčinja (42.332, 21.895), 6.8.2013.

Pezotettix giornae (Rossi, 1794)

Locality: Miratovac (42.270, 21.638); Klenike (42.392, 21.885), 19.7.2013.

Calliptamus italicus (Linnaeus, 1758)

Locality: 1♂, 1♀ - Miratovac (42.270, 21.638), 19.7.2013.

Paracaloptenus caloptenoides (Brunner von Wattenwyl, 1861)

Locality: 1♀ - Kozjak Mt. (42.319, 21.906), 8.8.2013.

Acrida ungarica (Herbst, 1786)

Locality: 1♂, 1♀ - Pčinja (42.335, 21.901), 6.8.2013.

Oedipoda caerulescens (Linnaeus, 1758)

Locality: Miratovac (42.270, 21.638), 19.7.2013.; Pčinja (42.336, 21.904), 7.8.2013.

Oedipoda germanica (Latreille, 1804)

Locality: 1♀ - Pčinja (42.336, 21.904), 7.8.2013.

Acrotylus insubricus (Scopoli, 1786)

Locality: 2♂♂ - Pčinja (42.336, 21.904), 7.8.2013.

Euthystira brachyptera (Ocskay, 1826)

Locality: 1♀ - Kozjak Mt. (42.319, 21.906), 8.8.2013.; 1♂ - Pčinja (42.332, 21.895), 6.8.2013.

Dociostaurus brevicollis (Eversmann, 1848)

Locality: 2♀♀ - Klenike (42.392, 21.885), 19.7.2013.; 2♀♀ - Pčinja (42.332, 21.896), 6.8.2013.; 1♀ - Pčinja (42.344, 21.902), 7.8.2013.

Omocestus rufipes (Zetterstedt, 1821)

Locality: 1♂ - Pčinja (42.350, 21.886) 20.7.2013.

Omocestus minutus (Brullé, 1832)

Locality: 1♂ - Pčinja (42.350, 21.886) 20.7.2013.; 3♂♂, 1♀ - Pčinja (42.336, 21.904), 7.8.2013.

Omocestus petraeus (Brisout de Barneville, 1856)

Locality: 1♀ - Miratovac (42.270, 21.638) 19.7.2013.

Stenobothrus lineatus (Panzer, 1796)

Locality: 1♀ - Miratovac (42.270, 21.638), 19.7.2013.; 1♀ - Kozjak Mt. (42.319, 21.906), 8.8.2013.; 1♀ - Pčinja (42.332, 21.896), 6.8.2013.

Stauroderus scalaris (Fischer von Waldheim, 1846)

Locality: 1♂, 1♀ - Kozjak Mt. (42.319, 21.906), 8.8.2013.

Chorthippus mollis (Charpentier, 1825)

Locality: 1♂ - Kozjak Mt. (42.319, 21.906), 8.8.2013.

Chorthippus biguttulus (Linnaeus, 1758)

Locality: 4♂♂ Klenike (42.392, 21.885), 19.7.2013.;

Chorthippus dorsatus (Zetterstedt, 1821)

Locality: 2♂♂, 3♀♀ - Pčinja (42.350, 21.886), 20.7.2013.; 1♂, 2♀♀ - Pčinja (42.335, 21.901), 6.8.2013.; 2♂♂, 3♀♀ - Pčinja (42.344, 21.902), 7.8.2013.; 2♀♀ - Pčinja (42.332, 21.895), 6.8.2013.

Pseudochorthippus parallelus (Zetterstedt, 1821)

Locality: Pčinja (42.333, 21.898), 6.8.2013.

Euchorthippus declivus (Brisout de Barneville, 1848)

Locality: Klenike (42.392, 21.885), 19.7.2013.

Altogether we detected 52 Orthoptera species (30 Ensifera and 22 Caelifera), which represents 30% of the total known Serbian Orthoptera fauna. The majority of these species have already been mentioned for Serbia, but not for the southern part of the country. The number of Orthoptera species is very likely much higher in the study area, as the results of this paper are based on very short field trips in very specific habitat types. Additionally, it was not performed in early summer, when many bush crickets are active. As a consequence, the study area requires more orthopterological surveys in future with special focus on the distribution of newly discovered and little known species in Serbia and the neighbouring countries.

Remarks

Metrioptera tsirojanni Harz & Pfau, 1983 (Fig. 1) – this species was firstly determined as *Vichetia knipperi* (Ramme, 1951) and published in PAVIČEVIĆ et al. (2014) by comparing female specimens without checking male titillators. After comparing male titillators (Fig 2A, 2B) with *V. knipperi* and *M. tsirojanni*, we detected that our specimens are morphologically similar to *M. tsirojanni*. Figure 2C shows the stridulatory file of an examined specimen which contains 70 teeth.

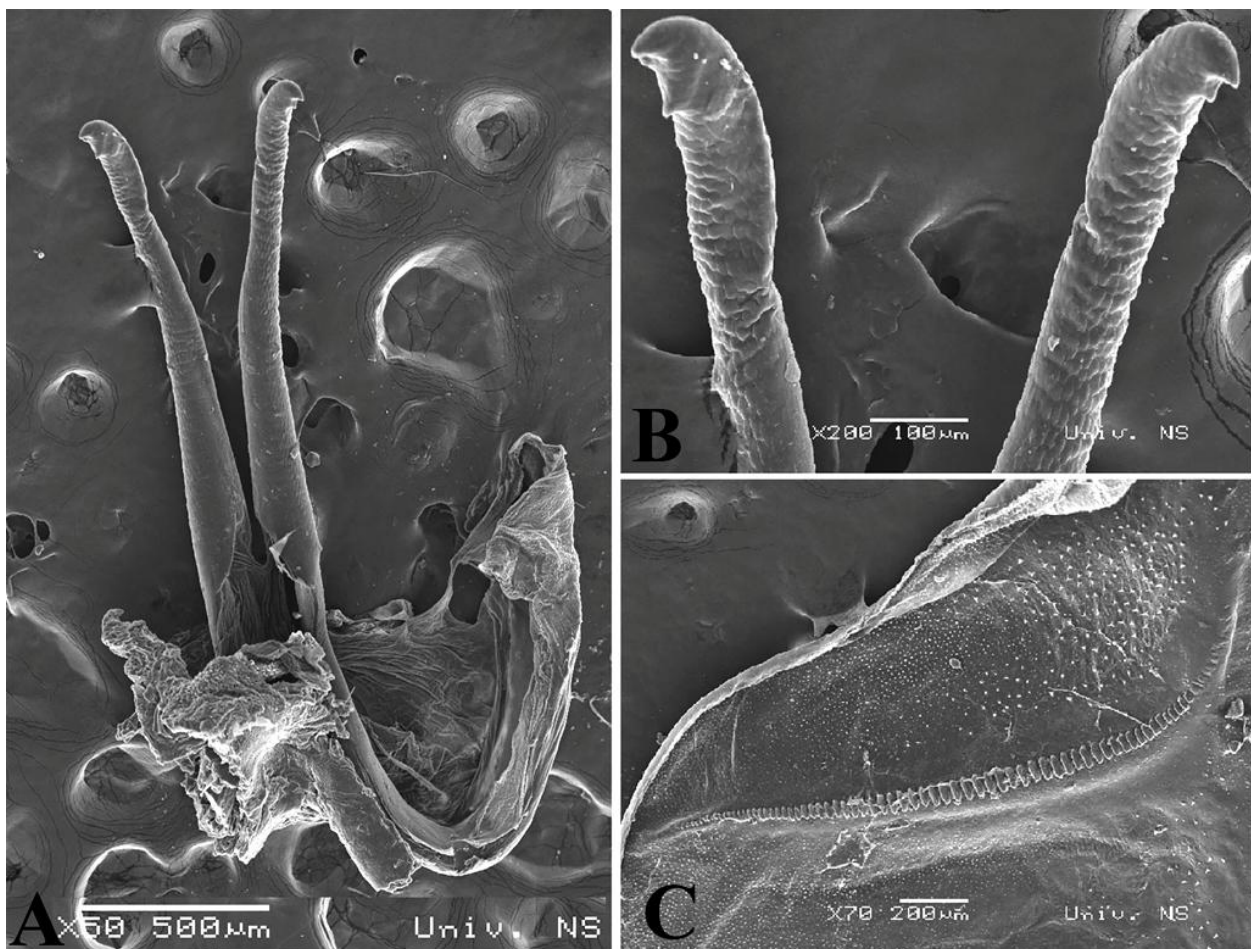


Figure 2: Electrone microscope photos of *Metrioptera tsirojanni* male morphological structures. A: titillators; B: tip of titillators; C: stridulatory file.

Pholidoptera macedonica Ramme, 1928 – This species is present in Macedonia, north Greece and southwestern Bulgaria (CHOBANOV 2009). We found only one female specimen by search during night with headlamps on the road near the border with Macedonia. Body colour is light brown, with blackish paranota and white band. The ovipositor is almost straight and 23 mm long which are the main characteristics of *P. macedonica*.

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